

Rules for the Classification of Portable Water Carriers

July 2021



Lloyd's
Register

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A guide to the Rules

and published requirements

Rules for the Classification of Potable Water Carriers

Introduction

The Rules are published as a complete set.

Rules updating

The Rules are published periodically and changed through a system of Notices between releases.

July 2021

PLEASE NOTE: No technical changes have been made to this Rule set, only the date has been updated.

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■ **Section 1**
General

1.1 Application

1.1.1 These requirements apply to sea-going ships designed and operated solely for transport in bulk of potable water. It is assumed that these ships are of conventional steel construction, and as such will comply with the requirements of Pt 4, Ch 9 *Double Hull Oil Tankers* for double hull construction and Pt 4, Ch 10 *Single Hull Oil Tankers* for single hull construction of the *Rules and Regulations for the Classification of Ships* (hereinafter referred as the Rules for Ships), except those aspects that may have an impact on the quality of delivered water.

1.2 Notations

1.2.1 Sea-going ships complying with these requirements, together with relevant requirements as stipulated in the Rules for Ships will be eligible to be classed as **100A1 Potable Water Carrier**.

1.2.2 Additional applicable notations may be assigned at the request of the Owner and at the discretion of the Committee.

1.3 Plans and information

1.3.1 In addition to plans as normally required by the relevant Parts and Chapters of the Rules for Ships, the plans and information stated in 1.3.2 to 1.3.5 are required to be submitted in triplicate as applicable.

1.3.2 **Design statement.** A design statement of the potable water containment system that details system capability and functionality under defined operating and emergency conditions within the normal concept of operation role of the ship.

1.3.3 **Compartments.** Plans showing the general arrangement of compartments, together with a description of the arrangements installed for making, storage and distribution of water. The plans are to indicate segregation and access arrangements for compartments and associated control rooms/stations.

1.3.4 **Certificates.** Coating specification with certificate of acceptance for toxicity and tainting testing by the authority recognized by the recipient country or port.

1.3.5 **Specification.** Specification of metallic and nonmetallic materials in contact with cargo is to be acceptable to the recipient country or port.

■ **Section 2**
Materials and protection

2.1 General

2.1.1 Materials, grades of steel and protection of materials are to comply with the requirements of Pt 3, Ch 2 *Materials and Rules for the Manufacture, Testing and Certification of Materials, July 2021 Manufacture, Testing and Certification of Materials*, of the Rules for Ships.

2.2 Salt water ballast spaces

2.2.1 At the time of new construction or conversion, all salt-water ballast spaces having boundaries formed by the hull envelope or the potable water cargo tanks shall have an efficient protective coating, epoxy or equivalent applied in accordance with the manufacturer's recommendations. The durability of the coatings could affect the frequency of survey of the spaces and light coloured coatings would assist in improving the effectiveness of subsequent surveys. Those agreeing to the specification for the coatings and their application should take these aspects into account.

2.2.2 For further information and recommendations regarding the coating of salt water ballast spaces, see the *List of Paints, Resins, Reinforcements and associated Materials*, published by LR.

2.3 Cathodic Protection

2.3.1 Sacrificial anode cathodic protection is not permitted in potable water cargo tanks.

2.4 Coating of cargo tank and piping internals

2.4.1 The cargo tanks and metallic cargo piping and valves should be lined internally with a corrosion control coating suitable for the containment and transfer of potable water to the recipient country or port. The suitability of a coating is defined as being in compliance with the requirements for potable water quality on discharging and/or carriage conditions stipulated by the recipient country or port.

2.4.2 Corrosion control coatings should also be tested and certified as complying with the current standards for use with potable water, as set down by the European Union, when such certification is not a condition stipulated by the recipient country or port in Ch 1, 2.4 *Coating of cargo tank and piping internals* 2.4.1.

2.4.3 Corrosion control coating(s) are to be selected in consultation with paint manufacturers with regard to suitability with the proposed tank and piping cleaning practice.

2.4.4 Details of the cargo tank and piping corrosion control coatings are to be submitted to LR for information.

2.4.5 Uncoated cargo tanks and piping in an acceptable state of cleanliness may be permitted providing there is prior agreement with the recipient country or port authority.

2.5 Plastic piping and flexible hosing

2.5.1 Subject to compliance with Pt 5, Ch 12, 5 *Plastic pipes* and Pt 5, Ch 12, 7 *Flexible hoses*, and relevant sections of Pt 5, Ch 13 *Ship Piping Systems* of the *Rules and Regulations for the Classification of Ships*, July 2021, plastic piping which is internally uncoated may be considered for the transfer of potable water.

2.5.2 Any internally uncoated plastic piping or flexible hosing in contact with, and for the transfer of, potable water should be suitable for the containment and transfer of potable water to the recipient country or port. The suitability of a plastic piping material is defined as being in compliance with the requirements for potable water quality on discharging and/or carriage conditions stipulated by the recipient country or port.

2.5.3 Uncoated plastic piping and flexible hosing should also be tested and are to comply with the current standards for use with potable water, as set down by the European Union, when such certification is not a condition stipulated by the recipient country or port in Ch 1, 2.4 *Coating of cargo tank and piping internals* 2.4.2.

2.5.4 Plastic piping is to be selected in consultation with the manufacturers with regard to suitability with the proposed piping cleaning practice.

■ Section 3**Cargo piping systems, valves, vents and pumps****3.1 Piping Systems**

3.1.1 The design of piping systems is to recognize operational and crewing philosophy for the vessel and is to be declared in the design statement.

3.1.2 Piping systems must be designed and operated solely for the transfer of potable water and must be independent of all other piping systems.

3.1.3 All equipment fitted in piping systems is to be readily accessible to facilitate maintenance and survey. For this purpose, valves or cocks are to be interposed between items of equipment and the inlet and outlet pipes in order that any item of equipment may be shut off for opening up and overhauling.

3.1.4 Any filter elements fitted in equipment or piping systems are to be capable of being cleaned and or changed.

3.1.5 Each cargo tank shall have two sampling points. It is to be ensured that contaminants cannot be introduced in the tanks due to the location of the sampling points.

3.2 Valves, vents and pumps

3.2.1 Valves are to be fitted in places where they are at all times readily accessible.

3.2.2 All valves that are provided with remote control arrangements are to be arranged for local manual operation, independent of the remote operating mechanism. The local manual means of operation is to be readily accessible.

3.2.3 Relief valves are to be adjusted and bursting disks so selected that they relieve at a pressure not greater than the design pressure of the system. When satisfactorily adjusted, relief valves are to be protected against tampering or interference by wire with a lead seal or similar arrangement.

3.2.4 Pressure relief devices are to be mounted in such a way that it is not possible to isolate them from the part of the system which they are protecting except that, where duplicated, a changeover valve may be fitted that will allow either device to be isolated for maintenance purposes without it being possible to shut off the other device at the same time.

3.2.5 Hydraulically operated valves are not to be located inside cargo tanks unless it can be demonstrated that there is no risk of contamination during operation and in case of failure.

3.2.6 Tank vents must be so designed that there is no possibility of ingress of sea-water.

3.2.7 Submerged pumps are not permitted unless it can be demonstrated that there is no risk of contamination during operation or in case of failure.

3.3 Tank arrangement

3.3.1 Cargo tanks must be so arranged that there is no risk of contamination in case of boundary breach, except water ballast tanks.

3.3.2 Cargo tanks must be separated by cofferdams from tanks that contain alien fluids or substances that may cause contamination, except water ballast tanks.

3.3.3 Fittings in contact with cargo must be so designed and protected that there is no risk of contamination.

3.3.4 Tanks must be so arranged that sufficient ballast capacity be provided to ensure safe operation under all normal conditions.

■ Section 4

Water Quality Assurance

4.1 Monitoring systems

4.1.1 A data logging system with full redundancy for monitoring water acidity, temperature, salinity, turbidity and residual chlorine for each cargo tank and main manifolds are to be installed on board ship in the control room.

4.1.2 Two high accuracy electromagnetic reversible flow meters are to be installed in the mains on deck.

4.2 Cleaning systems

4.2.1 A full flow automatic chlorination system is to be installed. As guidance on the chlorination system, a capacity of up to 400 mg/litre for a VLCC is to be installed.

4.2.2 Other tank washing systems will be accepted provided they are to be acceptable to the National Authority with whom the ship is registered and/or by the Administration within whose territorial jurisdiction the ship is intended to operate.

4.2.3 Care is to be taken when designing the tanks to ensure to minimise crevices, corners and other inaccessible areas that cannot be properly cleaned.

■ Section 5
Testing and trials**5.1 Testing**

5.1.1 The requirements of the Rules for Ships relating to testing of pressure vessels, piping and related fittings including hydraulic testing are applicable.

5.1.2 After installation on board, piping systems together with associated fittings that are under internal pressure, are to be subjected to a running test at the intended maximum working pressure.

5.1.3 Testing is to cover the following items:

- (a) Verification of control, alarm, safety systems.
- (b) Verification of accuracy, calibration and functioning of water quality monitoring systems.

5.2 Trials

5.2.1 Trials are to be carried out, prior to departure from shipyard, to demonstrate that the capability of the system for the maintenance of water quality to meet the design statement to the satisfaction of the Surveyor and the recipient country or port.

■ Section 6
Survey**6.1 Requirements**

6.1.1 In addition to the applicable requirements stipulated in the Rules for Ships, all systems and installations covered by these Rules are subjected to survey to the satisfaction of the Surveyor.

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